

PROJECT SPOTLIGHT

I-40 Widening From Harrison
Avenue to East of Jones
Franklin Road
in Wake County
(I-4744)

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NCDOT





Why Is This Project Needed?

- 160,000 ADT
 - Four-lane section
- } Max. Capacity of 4-lane @ LOS F
w/ speed reductions is 72,000 ADT
- The only four-lane section between US 15-501 and US 70 Business (Wake & Durham Counties)
 - Major artery into & out of RTP, Raleigh, Durham and Chapel Hill
 - Number 1 CAMPO priority project
 - Peak hour & holiday traffic jams



I-40 From US 70 Business in
Garner to US 1/64

I-40 From US 1/64 to Wade
Avenue

I-40 From Wade Avenue to US
15/501 in Durham

Design Considerations/Challenges

- Depth of temp. shoulder widening 13.5" to 16"
- Effect of trucks on temp. widening (6% duals, 12% TTST)
- Pavement type (asphalt vs. concrete)
- WZTC issues – traffic management
- Broken down/abandoned vehicles
- Thin pavement – marathon weekend
- Wade Avenue bridge movement







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- Wade Avenue bridge movement
- Subsurface drainage
- Median access for construction
- Bridge foundations at Wade Avenue & US 1/64
- 34.5" permanent pavement
- Stabilization
- Elimination of US 1/64 free-flow on I-40 eastbound
- Other nearby projects – tie-ins
- Events: RBC, Carter-Finley (Hurricanes), etc.

Project & Nearby Concerns



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- Other nearby projects – tie-ins
- Events: RBC, Carter-Finley (Hurricanes), etc.
- High profile
- Needed a \$50 million project with little impact to motorists

S.T.Wooten Design/Build Team

- Experienced team
- RK&K – Lead Designer
- T&H Electrical-Dedicated Sub

Design/Build Solutions

- PreBid Geotech Investigation
 - Warm Mix Asphalt
 - Material Conveyors
- Construction Planning













Paths To Resolution - Solutions















Every problem has in it the seeds
of its own solution. If you don't
have any problems, you don't get
any seeds.

~Norman Vincent Peale

Hauling Hours

- Contract Restrictions
 - Single Vehicle
 - 6am to 9am Monday through Friday
 - 3pm to 8pm Monday through Friday
 - Multiple Vehicle
 - 6am to 9pm Monday Through Friday
 - 9am to 9pm Saturday
 - 10am to 9pm Sunday

Hauling Hours

- DB Team conducted a traffic study
- Study did not support full weekend hauling
- Study showed that hauling hours could be extended M-F starting at 7pm and beginning at 5pm Saturday
- NCDOT reviewed and accepted study, but was not comfortable extending Friday and weekend hauling hours
- Used a two-week trial period to determine impact of additional haul hours
- \$50K project credit

Hauling Hours

- Contract Restrictions
 - Single Vehicle
 - 6am to 9am Monday through Friday
 - 3pm to 8pm Monday through Friday
 - Multiple Vehicle
 - 6am to 7pm Monday Through Thursday
 - 9am to 9pm Saturday
 - 10am to 9pm Sunday



Traffic Control Meetings

- established in addition to construction meetings
- involved RK&K, NCDOT TC and Public Information, and construction team
- discussed and reviewed upcoming work and impact to traffic
- revised and improved MOT

54" CMP/Drilled Shaft Conflict

- Next-to-last shaft at Wade Avenue
- Pipe is shown on the plans
- Pipe was ~32' deep
- Drill brought up pieces of pipe







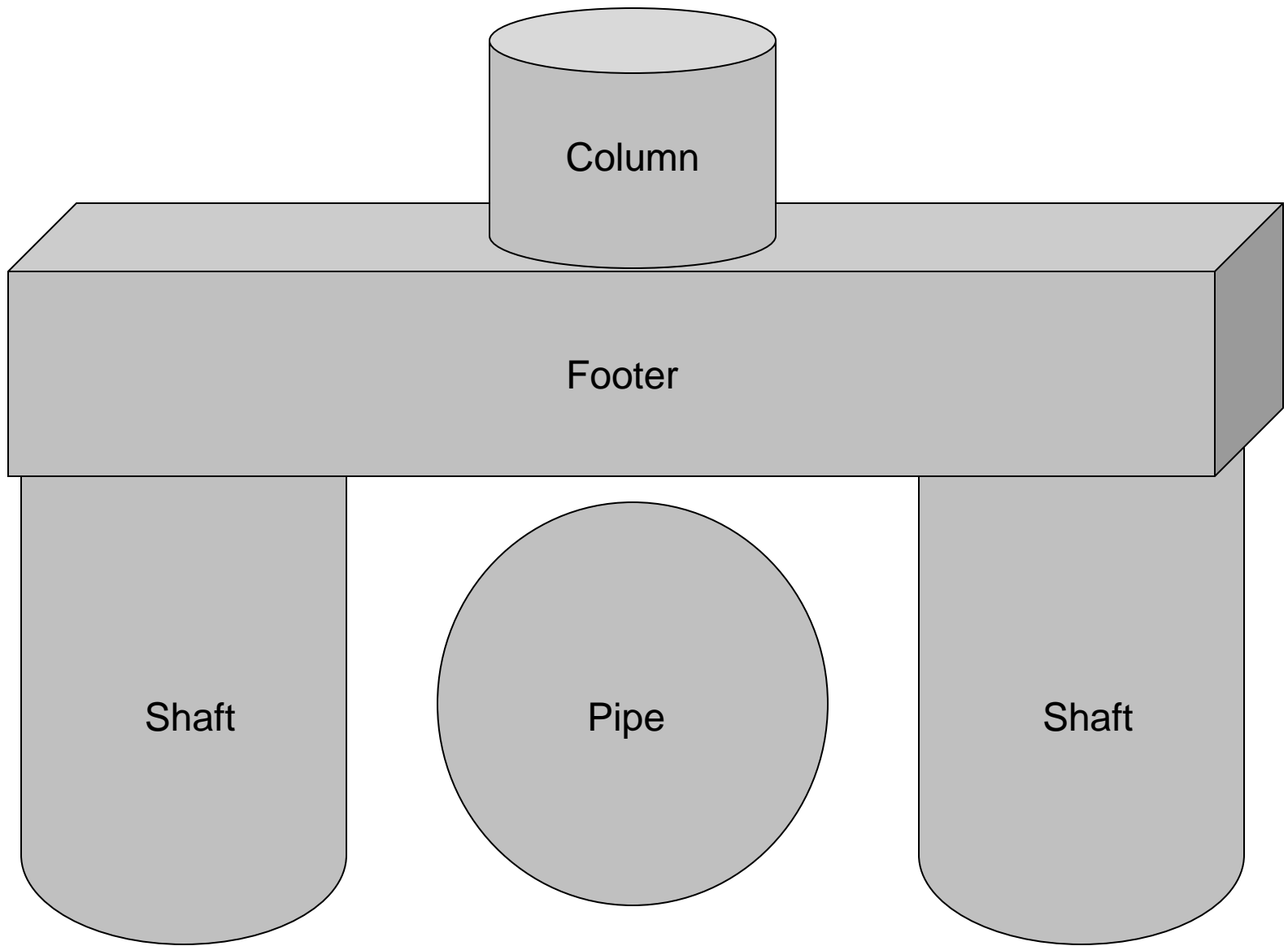
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54" CMP/Drilled Shaft Conflict

- Next-to-last shaft at Wade Avenue
- Pipe shown on plans
- Pipe was ~32' deep
- Drill brought up pieces of pipe
- Casing used – sealed it off
- Investigated with a pipe camera
- Specialized sub lined the pipe & pulled caisson at the same time

54" CMP/Drilled Shaft Conflict Resolution

- Drilled two extra shafts, one on each side of pipe
- Poured a footer on the two shafts to bridge the pipe



Sequence & Timeline

- 01/22/10 Coastal Caisson hit 54" pipe
- 02/09/10 Formal Repair procedure submitted to NCDOT
- 02/11/10 Hydraulics approval
- 02/15/10 Permit mod. submitted to NCDOT
- 02/15/10 Revised foundation recs. and substructure plans submitted to NCDOT
- 02/18/10 NCDOT approves revised foundation recs. and substructure plans
- 02/19/10 Permit mod. approved by NCDENR/DWQ
- 02/22-3/2/10 Pipe repair performed



Coordination

- High Traffic Levels
- Close Working Quarters
- Coordination with Adjacent Projects, Traffic Operations Center, and Emergency Organizations







FOOD - EXIT 101
Waffle House
Dunkin' Donuts
McDonald's
Subway
Sonic Drive-Through
Chick-fil-A

09/20/2010 11:42 AM



07/28/2010 12:18 PM

Claim

Project Successes

- DB Team used technology to develop a plan that we could not specify in a design-bid-build
- Timely resolution of issues (started with weekly meetings); ABC gradation, etc.
- Early installation of lighting
- Traffic control monthly meetings
- No serious accidents/injuries – Traffic feedback
- Traffic study information
- 40% ahead of schedule

Questions?